AF/3724

40 Supplement to Appeal Brief 3/28/01 Mat

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Kimberly A. Lawrence
NAME OF PERSON MAILING PAPER OR FEE

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SIGNATURE DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of	)	
	)	
Rene Langhans	)	Examiner: C. Goodman
	)	Group Art Unit: 3724
on ROTARY CUTTING UNIT	)	
	)	
Serial No.: 08/883,685	)	
	)	(Our Docket No. 2821-193)
Filed on: June 27, 1997	)	

Hartford, Connecticut, March 21, 2001

Hon. Assistant Secretary and Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Appellant's Supplement to the Appeal Brief

SIR:

This Supplement is provided to the Appeal Brief refiled on February 28, 2001 in response to Examiner's January 29, 2001 Notice of Non-Compliance. The appeal was taken from the Final Office Action mailed March 8, 2000.

The enclosed four documents are submitted as evidence that pin wrenches for adjusting threaded members through-a-slot exposing the member have been in use since prior to 1924 when production of the Stanley Steamer ceased. (Please see the highlighted text in the documents). See Stanley Steam Car Handbook, pages 1-3, and Figure 3, showing Adjusting Screw and slot.

Please also see Stanley Museum Newsletter, March 1987, p.1,

discussing construction of a pin wrench and Figure "The Steam Automatic" showing adjusting screw ref. no. 434 used in a Stanley Steam car. Moreover, please see Stanley Museum Newsletter, June 1992, p. 1, and Figure 460 in the second column showing adjusting screw ref. no. 464 used in a Stanley Steam car.

Furthermore, pin wrenches today are staple commodities of commerce available from sources such as catalogue houses. (See excerpts from the 1995 McMaster-Carr Supply Company catalog showing pin wrenches and pin punches).

The enclosed documents have been recently drawn from a variety of sources to show that persons skilled in the mechanical arts have been well versed in the use of pin wrenches for adjusting threaded members for 75 years or more. Detailed elaboration on pin wrenches and their use should therefore not be necessary in the present patent application.

While Applicants believe no fees are due upon filing this response, please charge any deficiencies in fees associated with the filing of this amendment to our Deposit Account No. 13-0235.

Respectfully submitted,

By _____

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Stanley

STEAM CAR

FOREWORD

There is nothing mysterious about a Stanley car. Its wheels, axles, chassis frame, body, radiator, steering gear, brakes, storage battery and dynamo are similar to other cars. Its power plant and power control are different and are very simple. The power plant consists principally of

A simple two cylinder double acting steam engine, which is attached rigidly to the rear axle, so that the engine and rear axle; in fact, the whole driving mechanism is a unit, attached to the chassis frame at three points.

A boiler which supplies steam to the engine.

A kerosene burner which supplies heat to the boiler.

A set of tanks and pumps which automatically supply water to the boiler, fuel to the burner, and lubricating oil to the engine cylinders.

A set of automatic valves which control the supply of water to the boiler and fuel to the burner.

A radiator which condenses the exhaust steam and returns the water to the water tank.

A storage battery which supplies current for light and for starting the pilot light.

A dynamo which automatically charges the storage battery.

The power control consists of a throttle lever and a reverse pedal.

Mechanical knowledge is not necessary in order to drive a Stanley car successfully, but a thorough understanding of the car will assist one to get the best results under all conditions.

STANLEY MOTOR CARRIAGE CO.,
NEWTON, MASSACHUSETTS

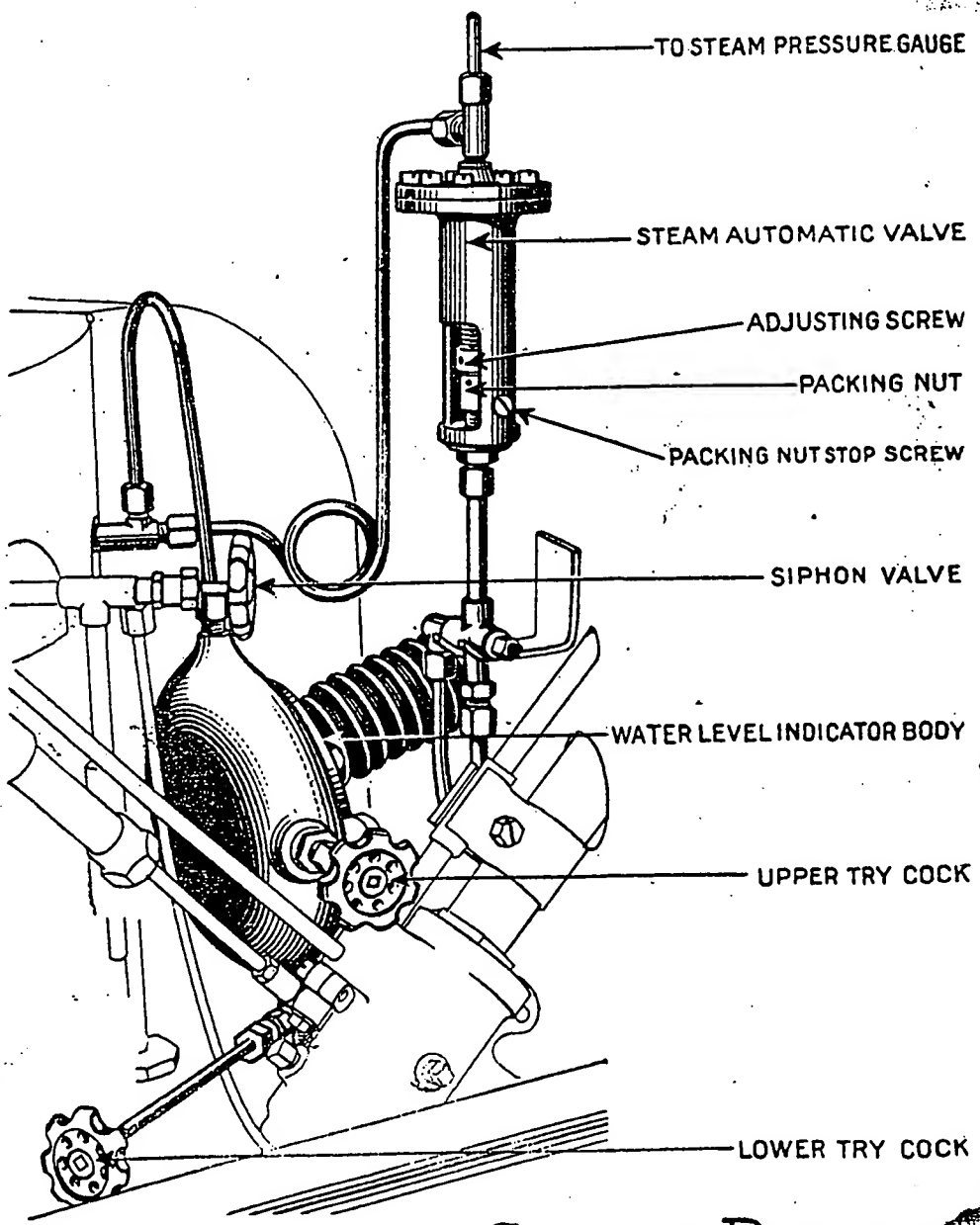


FIG 3 — LEFT SIDE OF BOILER

Article 2: To Steam Up (*Continued*)

See Fig. 3

Open the lower try-cock at the bottom of the water-indicator which is between the boiler and dash on the left side, and see that runs out of it.

If it does, it indicates that the water in the boiler is above this and that is sufficient for steaming up.

More does no harm but will take more time to raise steam.

If no water runs out read Paragraph 3 of Article 4.

Repair of the Stanley Steam Automatic

By Ole B. Vikre

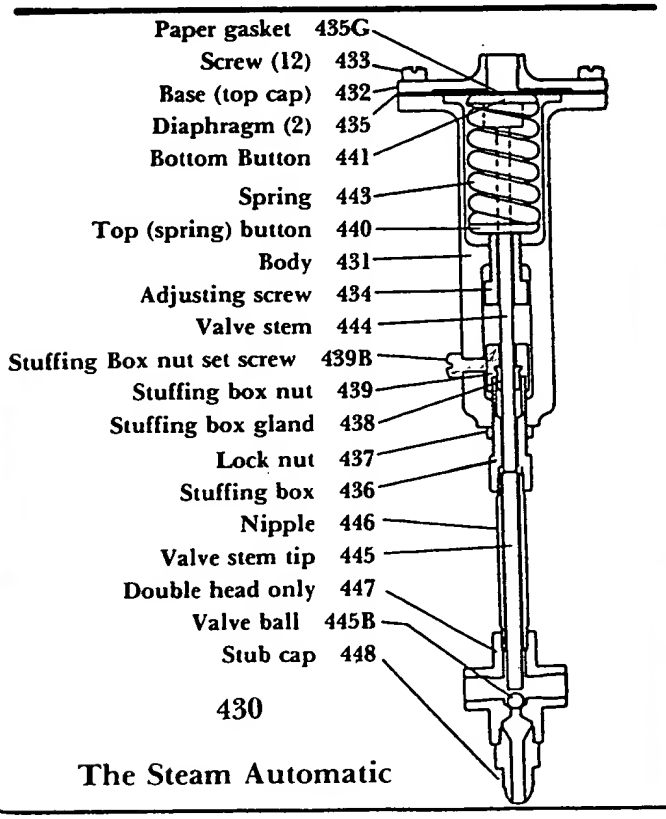
The steam automatic valve, pc. #430 (like the fuel automatic, pc. #460, see STEAM TALK article June 1986, Volume V, Number 1) is a simple diaphragm operated valve, although it works conversely to the fuel automatic.

Clean the parts with pilot fuel, and wire-brush the body, top cap, and double cap (pc. #'s 431, 432 and 447). Then machine the two twelve-hole surfaces by taking a light skim-chip to provide perfectly planed surfaces. Two 0.014" annealed beryllium copper diaphragms and a paper gasket are held between these two surfaces by means of twelve 1/4"-20-NC fillister-head screws 9/16" long.

Machine the seat in the double (or single) head (pc. #'s 442 or 447), after removing the nippel (pc. #446). This is done by turning an adapter in your lathe with a 5/8"-20-NS thread to receive the head. Using a "Letter R" drill (0.339" dia.) ground to 90 degrees included angle, just skim the seat until bright all around. Then, use a flat-bottomed "Letter R" drill to clean the shelf around the seat.

Polish the stem, particularly in way of the packing, using Crocus cloth as the final abrasive.

Assemble the double head, nipple, and stuffing box (pc.#s 447 (or 442), 446 and 436). Screw this assembly onto the same adapter used to machine the seat and ascertain that these three parts are in perfect alignment and run true.



430

The Steam Automatic

With the stem and ball in place, and before assembling the spring-case portion of the valve, pack the stuffing box.

Run a #16 drill (0.177" dia.) through the six holes in the adjusting screw and the stuffing box nut. Make a pin wrench from a piece of 1/4" drill rod about 3" long, turned down to 0.175" for a distance of 1/4" on one end. Chamfer each end 1/64" x 45 degrees to knock off any sharp edges. Then heat the small end red hot with a torch and quench in cylinder oil. This will toughen the wrench sufficiently to adjust your stuffing box nut and adjusting screw.

Assemble valve. Use Permatex cement on both sides of the paper gasket. Place the gasket against the twelve hole surface of the base, or top cap. Insert two fillister-head screws (180 degrees apart) through the top cap and gasket. Then put the two diaphragms in place., Bring the top cap and the body together and screw the two screws finger tight; then install the remaining ten screws.

Holding the body in a vise (using copper jaws), tighten the twelve screws evenly, using a heavy-duty screw driver and a 6" adjustable wrench. After assembly, bring the adjusting screw (pc. #434) up against the top spring button (pc. #440), and compress the spring about three complete turns.

With the locknut (pc. #437) backed off as far as it will go, tighten the assembly consisting of the stuffing box, nipple, double head, and stub cap (pc. #s 436, 446, 447, and 448) until the stem holds the ball firmly on the seat. Then, back off the assembly 3/4's of a turn and set the lock nut (pc. #437) against the body (pc. #431).

Check the stuffing-box nut and adjust for proper tension. Tighten the stuffing box nut set screw, making sure that there is clearance between the end of the set screw and the stuffing box nut.

Using high pressure air, set the valve to shut off at the desired pressure, usually between 500 and 600 psi. Using the heaviest duty spring in the body should make this valve work with a maximum differential of no more than 25 psi.

If these instructions are followed carefully, this valve should give trouble-free service for many years. □

---

445 **Valve stem tip.** Many times the valve stem tip and the valve stem (pc. #'s 445 and 444) are combined into just one stem the diameter of the valve stem.

442 **Single head.** This fitting, which contains the seat and valve ball (pc. #445B), was available with either one side outlet or two (pc. #447).

449 **Wire gauge strainer.** Although seldom found, the parts list calls for a strainer which is retained within the single head (pc. #442) or the double head (pc. #'s 447 or 447A) by means of the stub cap (pc. #448).

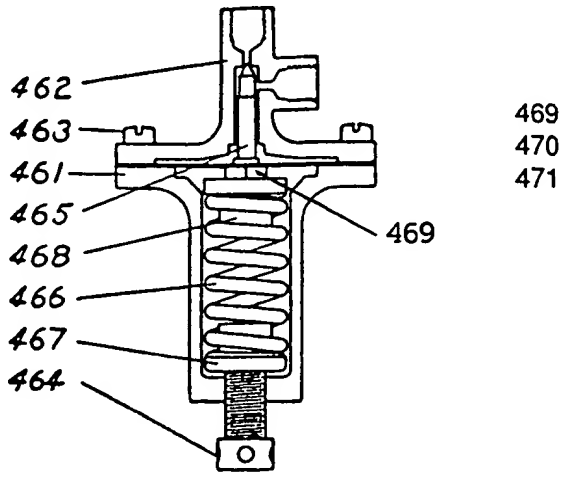
Stanley Fuel Automatics: A Modification

by Ole B. Vikre, Jr.

I first heard about this "fix" several years ago when I asked Ole's son-in-law, Brent Campbell, why he didn't bother to shut his pressure retaining valve when he parked his car for any length. How nice not to lose all your fuel pressure because you forget to shut it at the end of the day! I've been asking Ole for this ever since, so I'm especially happy to present this article now.

The Stanley fuel automatic, part #460 in the Stanley parts catalogue, has been manufactured in three distinct styles:

A. Exactly as shown in the parts catalogue as #460 — see drawing;
B. With the lower spring seat, parts catalogue #468, sitting directly on the diaphragm without the hex nut, #469;
C. The style used in the condensing cars, which has an additional part, shown in the article as piece #2, with a 7/16"-20 thread, made completely of 5/8" hex brass. It originally had a hardened steel insert that served as a seat, a spring-loaded needle also made from steel, and used a dimpled diaphragm. The needle, parts catalogue #465, and its mating seat, which was pressed into the 7/16"-20 end of piece #2, were both hardened steel. These pieces soon rusted and otherwise deteriorated, causing leakage.



460

This "new" modification uses one each of pieces #1, #2 and #3, as shown, plus a gasket and diaphragm (without a hole). It also employs a Nylatron insert (also called molybdenum-filled nylon) 1/4" in diameter x 5/16" long. This insert is placed into the end of piece #1 and swaged in place. After swaging, the end is machined square with the axis of piece #1.

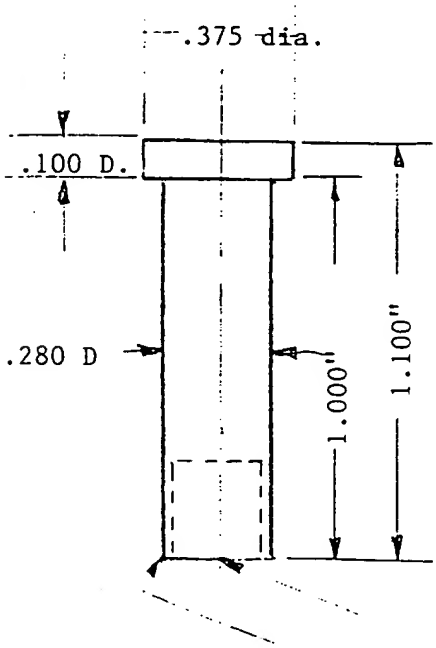
If your fuel automatic is exactly like #460 in the parts catalogue, the area in the way of the pin (or needle) will have to be carefully enlarged to accommodate pieces #1 and #3, finishing the bottom face with a flat-bottomed drill a few thousandths of an inch larger than the o.d. of your small spring, piece #3 (.422-.425").

The next step is to make up a sleeve from scrap brass the same i.d. and o.d. as the small spring, piece #3, but only 7/8" in length. Using this sleeve in place of the small spring, install it along with piece #1 into the valve cavity of parts catalogue #462 which you previously machined with the flat-bottomed drill.

The .375" diameter button on the end of piece #1 and the gasket surface of parts catalogue #642

continued on Page 15

PIECE #1



Cavity 1/4" d. x 1/4" deep for Nylatron insert.

Swage after insertion of Nylatron to retain. Insert size 1/4" d. x 5/16" long.

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Length	No.	NET EACH
1¾"	6451A21	$29.68
1¾"	6451A22	29.95
1¾"	6451A23	32.67
1¾"	6451A24	32.95
1⅞"	6451A25	35.40
2"	6451A27	38.39
2⅛"	6451A29	43.02
2½"	6451A31	49.74
2½"	6451A32	51.19

BERYLLIUM COPPER DRIVE TOOLS

ption	No.	NET EACH
het Wrench	6451A12	$114.31
nsion Bar	6451A13	70.79
Handle	6451A14	83.86

IECE SET—Includes one of each and drive tool listed above. Set is in a plastic box.
51A11 ..... NET/SET $572.33

Square-Drive Sockets and Drive Tools

T. BERYLLIUM COPPER SOCKETS

Length	No.	NET EACH
1½"	6503A19	$23.36
1½"	6503A21	22.30
1 15/32"	6503A22	22.30
1 33/64"	6503A23	22.30
1 33/64"	6503A24	22.30
1½"	6503A25	22.30
1½"	6503A26	24.77
1½"	6503A27	24.51
1½"	6503A28	25.83
1½"	6503A29	31.64
1 31/64"	6503A38	33.45
1¾"	6503A32	39.83
1¾"	6503A33	41.28
1¾"	6503A34	45.94
1¾"	6503A35	50.09
1¾"	6503A36	53.10
1¾"	6503A37	58.23

AMPCO METAL DRIVE TOOLS

scription	No.	NET EACH
Ratchet Wrench	6503A3	$108.33
Extension Bar	6503A14	65.00
Sliding Bar	6503A15	17.79
Flex Handle	6503A16	205.82

-PIECE SET—Includes one each of the ve tools listed above, plus sockets in sizes , 1 1/16", ⅞", 1 1/16", and 1¼". Case is non-arking aluminum.
. 6503A2 ..... NET/SET $520.42
21-PIECE SET—Includes one each of the ve tools listed above, plus one of each size cket listed. Set is packed in a nonsparking uminum case.
. 6503A1 ..... NET/SET $798.83
½" SQUARE-DRIVE IMPACT SOCKETS—ese 12-point standard sockets are made of rged beryllium copper.

ize	Length	No.	NET EACH
¼"	1½"	6527A11	$73.66
13/16"	1½"	6527A13	77.10
1/16"	1¾"	6527A14	81.52
⅛"	1¾"	6527A15	90.85
¼"	2¼"	6527A16	98.21

NONSPARKING ALUMINUM CASE—Size s 16" long × 3¼" wide × 1⅞" deep.
No. 6503A17 ..... NET EACH $90.97

¾" Square-Drive Sockets and Drive Tools

12-PT. BERYLLIUM COPPER SOCKETS

Size	Length	No.	NET EACH
1 5/16"	2 3/16"	6490A11	$81.50
1 3/16"	2 9/32"	6490A12	81.50
1 7/16"	2 5/16"	6490A13	81.50
1½"	2 9/32"	6490A14	81.50
1 9/16"	2 13/64"	6490A15	84.67
1 5/8"	2 5/16"	6490A16	84.67
1 11/16"	2 13/32"	6490A17	84.67
1¾"	2 29/64"	6490A18	84.67
1 13/16"	2 9/16"	6490A19	89.91
1⅞"	2 7/16"	6490A21	89.91
2"	2 35/64"	6490A22	89.91

AMPCO METAL DRIVE TOOLS

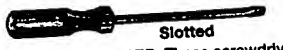
Description	No.	NET EACH
18" Ratchet Wrench	6490A31	$167.32
17" Extension Bar	6490A32	111.86
18" Flex Handle	6490A34	198.95

Nonsparking Awls

BERYLLIUM COPPER. Blade is tapered for marking and puncturing. Handle is plastic.

Blade Dia.	Blade Length	Overall Length	No.	NET EACH
¼"	4"	7¼"	6453A11	$18.32
⅛"	10⅛"	15¼"	6453A14	18.91

Screwdrivers



Slotted

BERYLLIUM COPPER. These screwdrivers have round blades and plastic handles.

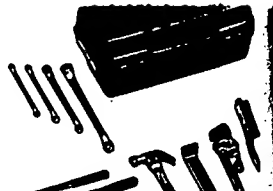
Tip Width	Blade Length	Overall Length	No.	NET EACH
SLOTTED BLADE				
¼"	2"	5"	6525A5	$9.26
5/16"	3"	6½"	6525A1	10.97
7/16"	6"	10⅛"	6525A2	16.29
25/64"	8"	13"	6525A3	24.23
3/16"	10"	13"	6525A7	12.44
25/64"	12"	16⅞"	6525A4	30.71
13/32"	18"	23"	6525A8	47.77
PHILLIPS BLADE				
#1	3"	6⅛"	6529A1	6.18
#2	4"	7½"	6529A2	9.21
#3	6"	10⅛"	6529A3	16.38
#4	8"	13"	6529A4	21.42

4-PC. SET—Slotted sizes 5/16" × 3", 7/16" × 6", 25/64" × 8"; Phillips #2 × 7½" in roll-up pouch.
No. 6525A21 ..... NET/SET $61.31
6-PC. SET—Slotted sizes 5/16" × 3", 7/16" × 6", 25/64" × 8"; Phillips sizes #1 × 3", #2 × 4", and #3 × 6" in roll-up pouch.
No. 6525A22 ..... NET/SET $77.07

Flange Wedges

AMPCO METAL

Lg.	Blade Ht.	Blade Wd.	No.	NET EACH
3¼"	¼"	½"	6517A1	$9.49
3½"	3/8"	.2"	6517A11	11.92
4"	½"	¾"	6517A12	6.67
6"	½"	1"	6517A13	9.20
6"	¾"	1½"	6517A14	13.24
7"	5/8"	.2"	6517A22	15.33
7"	½"	1¼"	6517A15	11.19
7"	¾"	.2"	6517A16	18.35
8"	¾"	.2"	6517A19	23.75
8"	1"	1½"	6517A18	21.32
8"	1⅛"	1½"	6517A17	25.60
8½"	1¼"	.2"	6517A21	27.55



No. 6534A2

Tools are Ampco metal, except for screw drivers and knives which are extra-hard copper alloy. The 3-, 4-, and 6-piece sets are packed in a nonmetallic zip-up pouch. The 11- and 16-piece sets are packed in a heavy-duty polyethylene box (17"L × 6½"W × 7½"H).

3-PIECE SET—Includes a slotted screwdriver (5/16" × 3" blade), 6½" combination pliers, and 6" adjustable wrench.
No. 6533A8 ..... NET/SET $98.

4-PIECE SET—Includes a slotted screwdriver (5/16" × 3" blade), 6½" combination pliers, 8" adjustable wrench, and a 9" hammer/claw crate opener.
No. 6533A5 ..... NET/SET $123.

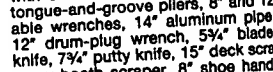
6-PIECE SET—Includes a slotted screwdriver (5/16" × 3" blade), Phillips screwdriver (#2 × 4" blade), 6½" combination pliers, 9½" tongue-and-groove pliers, 8" adjustable wrench, and a 9" hammer/claw crate opener.
No. 6533A7 ..... NET/SET $196.

11-PC. SET—Includes a slotted screwdriver (7/16" × 6" blade), Phillips screwdriver (#2 × 6" blade), 6½" combination pliers, 9½" tongue-and-groove pliers, 6" and 10" adjustable wrenches, 10" pipe wrench, 7½" putty knife, 3½" blade paring knife, 12½" long 12-oz. claw hammer, and an 8" shoe handle brush.
No. 6534A1 ..... NET/SET $424.

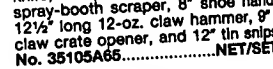
16-PIECE SET—Includes a slotted screwdriver (7/16" × 6" blade), Phillips screwdriver (#2 × 4" blade), 6½" and 8" combination pliers, 9½" tongue-and-groove pliers, 10" adjustable wrench, 14" pipe wrench, 12-point box wrenches in sizes 5/16" × 5/16", 7/16" × 7/16", 9/16" × 9/16", and ¾" × ⅞", 1¼" putty knife, 3½" wide blade paring knife, 12½" long 12-oz. claw hammer, 8" shoe handle brush, and 10" long deck scraper.
No. 6534A2 ..... NET/SET $81.

17-PIECE HAZ-MAT SET—The 5-gal. polyurethane bucket has a screw-on lid to isolate contaminated tools. A removable divider keeps tools upright. Set includes a slotted screwdriver (7/16" × 6" blade), Phillips screwdriver (#3 × 6" blade), 7" long-nose pliers with side cutter, 8" combination pliers, 9½" tongue-and-groove pliers, 8" and 12" adjustable wrenches, 14" aluminum pipe wrench, 12" drum-plug wrench, 5¾" blade butcher knife, 7¾" putty knife, 15" deck scraper, 9" spray-booth scraper, 8" shoe handle brush, 12½" long 12-oz. claw hammer, 9" hammer/claw crate opener, and 12" tin snips.
No. 35105A65 ..... NET/SET $68

Knives



Paring



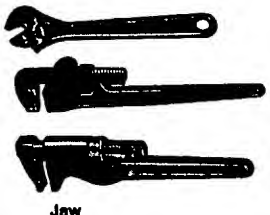
Butcher

Square-Point

BERYLLIUM COPPER. Handles are w

Blade Length	Overall Length	No.	NET E
PARING KNIFE			
3½"	6¾"	3925A1	
BUTCHER KNIFE			
5¾"	10¼"	3925A2	
SQUARE-POINT KNIFE			
4"	8"	6548A11	

Monkey Wrenches



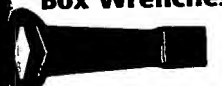
Jaw Cap.	No.	NET EACH
ADJUSTABLE WRENCHES		
AMPCO METAL		
15/16"	6502A1	$39.09
1⅛"	6502A2	46.72
1 9/16"	6502A3	61.82
1½"	6502A4	78.18
1 11/16"	6502A5	141.59
TYPE WRENCHES WITH EXTRA-HARD COPPER ALLOY JAW INSERTS		
ALUMINUM WITH BRONZE HOOK		
1"	6461A21	$112.92
1½"	6461A22 ♦	146.02
2"	6461A23	147.17
2½"	6461A24	171.15
3½"	6461A25	257.04
5"	6461A26	474.63
AMPCO METAL		
¾"	6498A1 ♦	$90.90
1"	6498A2	107.52
1½"	6498A3 ♦	129.82
2"	6498A4	138.96
2½"	6498A5	187.57
3½"	6498A6	320.83
5"	6498A7	550.00
MONKEY WRENCHES		

AMPCO METAL — Also called engineers' and railroad wrenches.

1½"	6482A11	$91.66
1⅞"	6482A14	105.00
2¼"	6482A15	127.27
2 13/16"	6482A12	147.82
3"	6482A16	174.55
4⅛"	6482A13	226.55

...has no hanging hole in handle.

Striking-Face Box Wrenches



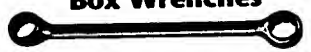
AMPCO METAL. Loosen frozen, rusted ...with a hammer blow. These wrenches ...6-point hex head and straight pattern.

Head Thk.	Overall Length	No.	NET EACH
0.713"	6½"	6507A12	$56.02
0.778"	7½"	6507A14	59.38
0.787"	7½"	6507A16	55.75
0.992"	8¾"	6507A18	58.76
0.970"	8¾"	6507A22	58.77
0.929"	9⅞"	6507A24	81.68
0.977"	9⅞"	6507A26	85.93
1.072"	10⅝"	6507A28	92.74
1.068"	10⅝"	6507A32	94.25
1.219"	11⅛"	6507A34	96.55
1.221"	12¼"	6507A36	99.68
1.158"	13½"	6507A38	126.02
1.22"	13½"	6507A42	126.02
1.387"	17"	6507A44	148.67

AMPCO METAL.

Point Dia.	Overall Length	No.	NET EACH
STRAIGHT DRIFT PINS			
1/16"	5¾"	6480A11	$8.76
5/32"	5¾"	6480A14	11.16
3/16"	8"	6480A12	13.10
7/16"	10"	6480A13	18.22
½"	10"	6480A15	29.02
BARREL DRIFT PINS			
1/16"	8"	6479A11	13.91
3/16"	8"	6479A12	15.92
7/16"	8"	6479A13	25.66
11/16"	8"	6479A14	41.94

Box Wrenches



AMPCO METAL. The 12-point heads are offset at a 15° angle.

Sizes	Length	No.	NET EACH
5/16" × 3/8"	7¾"	6505A11	$18.63
3/8" × 7/16"	7¾"	6505A12	20.45
7/16" × ½"	7¾"	6505A31	23.18
½" × 9/16"	9"	6505A13	24.90
½" × 19/32"	9½"	6505A14	28.10
9/16" × 5/8"	9½"	6505A15	28.10
5/8" × ¾"	10¾"	6505A16	29.09
11/16" × 25/32"	10¾"	6505A32	34.54
¾" × ⅞"	12¾"	6505A33	38.36
13/16" × ⅞"	12¼"	6505A17	36.90
⅞" × 1"	14¾"	6505A18	46.00
⅞" × 1 1/16"	15"	6505A19	46.36
15/16" × 1"	14¾"	6505A34	47.45
15/16" × 1 1/16"	15½"	6505A21	48.00
1" × 1⅛"	15½"	6505A22	51.68
1 1/16" × 1⅛"	15½"	6505A35	44.71
1 1/16" × 1¼"	19¼"	6505A23	60.65
1⅛" × 1 9/16"	19¼"	6505A24	64.69
1¼" × 1 9/16"	19¼"	6505A25	64.54
1¼" × 1 7/16"	19¼"	6505A26	63.51
1 7/16" × 1⅝"	19¼"	6505A27	71.66

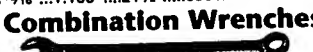
4-PIECE SET—Includes 9/16" × ⅜", 7/16" × ½", 9/16" × ⅝", and 11/16" × 25/32" wrenches, packaged in a plastic pouch.
No. 6431A12 ..... NET/SET $108.27

Structural Wrenches

AMPCO METAL. Wrenches have an offset handle with straight head. The tapered drift handle helps you align bolt holes.

Size	Head Thk.	Length	No.	NET EACH
11/16"	0.434"	11½"	6501A9	$32.00
⅞"	0.605"	14"	6501A11	41.36
1 1/16"	0.664"	15"	6501A2	43.52
1¼"	0.665"	15"	6501A3	43.81
1 7/16"	0.833"	18"	6501A4	103.64
1⅝"	1.106"	20"	6501A5	87.08
1 13/16"	1.100"	21½"	6501A6	91.68

Combination Wrenches



AMPCO METAL. Wrenches have a 15° angled open end and a 12-point box. Openings are the same size on both ends.

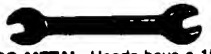
Size	Length	No.	NET EACH
3/8"	7¼"	6506A12	$17.82
7/16"	7¼"	6506A13	19.27
½"	7¼"	6506A14	21.09
9/16"	8¼"	6506A15	22.00
5/8"	8¼"	6506A16	23.09
11/16"	10⅛"	6506A17	25.91
¾"	10⅛"	6506A18	27.73
⅞"	13¼"	6506A19	41.73
1"	13¼"	6506A21	45.77
1 1/16"	17"	6506A22	46.15
1⅛"	17"	6506A23	54.59
1¼"	19⅝"	6506A24	58.40
1 5/16"	19⅝"	6506A25	59.82
1⅜"	21¼"	6506A26	70.44
1 7/16"	21¼"	6506A27	70.62
1½"	21¼"	6506A28	70.62
1⅝"	22"	6506A29	73.72

6-PC. SET—Sizes 7/16", ½", 9/16", ⅝", ¾", and 1⅛" packed in a roll-up pouch.
No. 6506A41 ..... NET/SET $154.55
7-PC. SET—Sizes ⅜", 7/16", ½", 9/16", ⅝", ¾", and ⅞" packed in a roll-up pouch.
No. 6506A42 ..... NET/SET $161.94

Pins and Punches

Stock Dia.	Point Dia.	Overall Length	No.	NET EACH
CENTER PUNCHES				
5/16"	5/32"	4"	3495A21	$8.50
3/8"	1/8"	4½"	3495A22	8.84
½"	7/32"	5"	3495A23	10.54
5/8"	7/32"	6"	3495A24	13.62
PIN PUNCHES				
3/8"	1/8"	5¼"	6477A31	9.03
9/16"	¼"	6"	6477A32	9.90
9/16"	3/8"	6¾"	6477A33	11.59
11/16"	½"	8"	6477A34	17.26
13/16"	5/8"	12"	6477A35	27.16

Open End Wrenches



AMPCO METAL. Heads have a 15° angle.

Sizes	Length	No.	NET EACH
3/16" × 7/32"	3½"	6499A51 •	$5.17
¼" × 9/32"	3½"	6499A61 •	5.72
¼" × 5/16"	5¼"	6499A31	20.27
5/16" × 11/32"	3½"	6499A62 •	5.99
3/8" × 7/16"	5¼"	6499A32	20.33
7/16" × ½"	5¼"	6499A11	20.52
½" × 5/8"	6"	6499A12	25.25
½" × 11/16"	8"	6499A33	23.31
9/16" × 5/8"	6"	6499A13	26.29
9/16" × ¾"	6¾"	6499A14	30.53
5/8" × ¾"	6¾"	6499A34	30.53
11/16" × 25/32"	6¾"	6499A35	32.21
11/16" × ⅞"	6¾"	6499A36	32.72
¾" × 13/16"	9¼"	6499A41	29.24
¾" × ⅞"	9¼"	6499A37	33.62
⅞" × 15/16"	9¼"	6499A17	35.07
⅞ × 1"	9½"	6499A42	42.80
⅞" × 1 1/16"	10¾"	6499A38	49.96
15/16" × 1 1/16"	10¾"	6499A39	44.59
1" × 1⅛"	10¾"	6499A18	46.00
1 1/16" × 1¼"	13⅜"	6499A19	49.20
1⅛" × 1 9/16"	13⅜"	6499A21	54.87
1¼" , × 1 7/16"	15¼"	6499A22	68.45
1¼" × 1⅝"	15¼"	6499A43	83.60
1 7/16" × 1⅝"	16¾"	6499A24	79.47
1⅝" × 1 13/16"	18¾"	6499A25	128.67
1 13/16" × 2"	18¾"	6499A26	134.07

• Beryllium copper with straight heads.

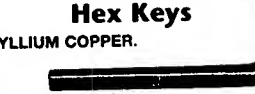
Adjustable-Head Spanner Wrenches

AMPCO METAL. Head has a movable hook.

Diameter Capacity	Hook Depth	Overall Length	No.	NET EACH
1¼"-3"	5/32"	8"	6504A1	$38.76
2" -4¾"	3/16"	11"	6504A2	45.75
4" -6⅜"	¼"	12"	6504A3	49.90

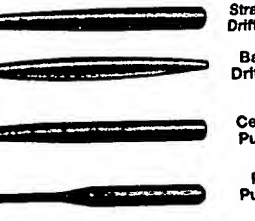
Hex Keys

BERYLLIUM COPPER.



Hex Size	Arm Length Short	Long	No.	NET EACH
1/16"	¾"	1¾"	6522A11	$3.30
5/64"	¾"	1¾"	6522A12	2.95
3/32"	¾"	1⅞"	6522A13	3.50
1/8"	1 3/16"	2 5/16"	6522A14	3.89
9/64"	⅞"	2½"	6522A32	4.04
5/32"	⅞"	2½"	6522A15	4.29
3/16"	⅞"	2⅞"	6522A16	5.00
7/32"	1 1/16"	3⅛"	6522A17	5.83
¼"	1 1/16"	3⅞"	6522A18	8.86
5/16"	1⅜"	4⅛"	6522A31	9.46
3/8"	1½"	4½"	6522A21	14.44
7/16"	1¾"	5¼"	6522A22	18.95
½"	1¾"	5¼"	6522A23	23.67
9/16"	1¾"	5¾"	6522A24	25.96
5/8"	1⅞"	6¼"	6522A25	37.52
11/16"	2¼"	7¼"	6522A26	45.53
¾"	2¼"	7¼"	6522A27	53.41
⅞"	2¼"	7¼"	6522A28	63.97
1"	2¼"	7¼"	6522A29	99.74

10-PC. SET—Sizes 1/16", 5/64", 3/32", 1/8", 5/32", 3/16", 7/32", ¼", 9/16", and 3/8" packed in a cloth pouch.
No. 6522A41 ..... NET/SET $62.30



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Pin Punch

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